

SIXPENCE

JULY 1944

# AMATEUR RADIO

THE  
OFFICIAL ORGAN  
OF THE  
WIRELESS INSTITUTE  
OF  
AUSTRALIA



Published by the Victorian Division

# AMATEUR-RADIO

INCORPORATING THE N.S.W. DIVISIONAL BULLETIN

Vol. 12. No. 7

July, 1944.

## VOLUME EXPANSION

Continued from last month.

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From an examination of Fig. 7 it is apparent that in reality the expander unit is a compressor circuit. Part of the input voltage is amplified by the triode section of the 63Q7 and is applied to the diode plates for rectification. The varying DC voltage appearing across the diode potentiometer supplies the negative bias for grids 1 and 3 of the 6L7, i.e. as the signal increases the  $\mu$  of the 6L7 decreases. Thus the  $\mu$  of the 6L7 becomes an inverse function of  $e$ .

Portion of the input voltage is also applied to grid 1 of the 6L7 and after amplification appears 180 degrees out of phase with  $e$  in the plate circuit.

Since the  $\mu$  of the 6L7 is an inverse function of  $e$  the voltage in the plate circuit of the 6L7 becomes the desired signal voltage  $e_2$  required to satisfy equation 6 for volume expansion by negative definition.

The value of  $R_x$  has not been listed but will have a value depending on the pickup and the type of needle used. For instance, with a good quality pickup and fibre needles the resistor could be eliminated but with a steel or jewel needle it would need to be about one megohm.

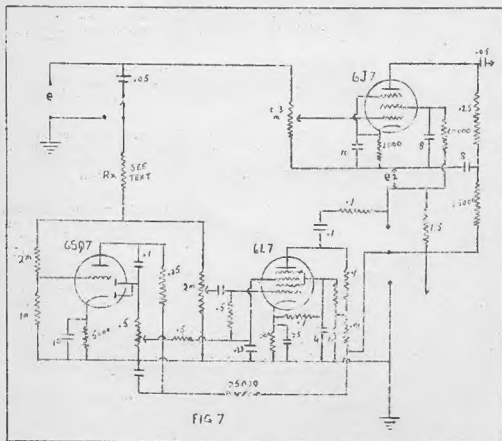
Adjustment of the expander may be carried out by ear. Referring to Fig. 7 set controls  $R_4$ ,  $R_6$  and  $R_{16}$  to ground potential. Now apply a signal and turn  $R_6$  until a comparatively small signal is heard in the speaker output; this represents  $e_2$ . Adjust  $R_4$  until plate current cutoff is reached by the 6L7 on loud passages (the signal in the speaker will fade out). Finally turn  $R_{16}$  through the zero-signal point to the setting of maximum volume for loud passages. If the soft passages are too quiet reset  $R_6$  to give a lower value of  $e_2$  and repeat the procedure.

The distortion inherent in the conventional volume expander on large input signals is eliminated in this circuit. Since as the signal input increases the plate current of the 6L7 approaches

cut-off, e2 will become ineffective and distortion cannot occur.

It should be noted that no change in fundamental amplifier design is necessary aside from the screen circuit of the input (mixer) tube; for example, with good design negative feed back voltage may be brought back from the output stage to the cathode or even screen of the input tube without consequent regenerative oscillations.

During the last year or two there has been considerable discussion in English Radio journals regarding the pros and cons of volume expansion. D. T. N. Williamson, writing in "Wireless World" has made considerable contribution to this discussion and in that journal he recently described an expansion unit which differs considerably from the majority of those previously published. He lays particular stress on the rate of increase and decrease of amplification in the unit.



It is necessary to arrange that the gain of the amplifier varies with the variations in intensity of the signal. A steady signal requiring a constant gain consists, however, of cyclic variations of audio frequency and if the gain were to alter instantaneously it would follow these cyclic variations and alter the wave form shown in Fig. 8 (a) to that of Fig 8 (b), thus producing objectionable distortion.

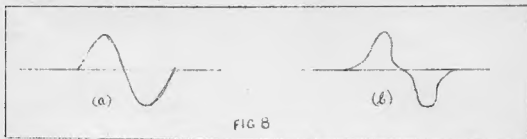


FIG 8

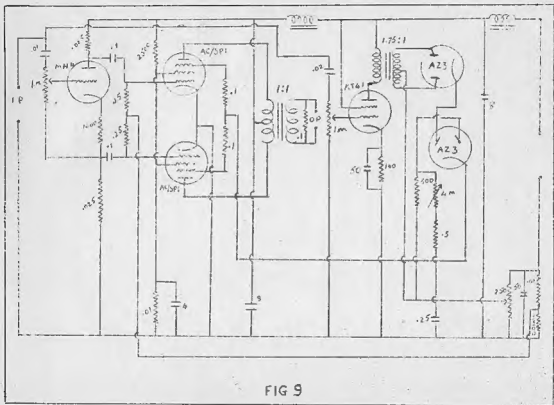
Therefore it is necessary to introduce some form of time delay. By this the rate of change of gain is reduced. If the rate of rise is reduced, however, poor transient response results. On the other hand, if the rate of fall of gain is reduced, transients are obviously unaffected as the transient ceases practically instantaneously and after it ceases, the way in which the gain varies doesn't matter.

In acoustics the maximum rate of delay of a signal is generally considerably less than the maximum rate of rise. It is thus apparent that the gain of the amplifier should rise very rapidly and fall at a relatively low rate.

In the usual form of expander the rates of rise and fall are approximately equal and the writer claims that this type of equipment can only give mediocre results. A time for fall of gain of about one second is found to be satisfactory and has the advantage that "flutter" does not occur due to large fluctuations of gain when reproducing music such as the final bars of the Beethoven 5th Symphony i.e. loud chords separated by short time intervals.

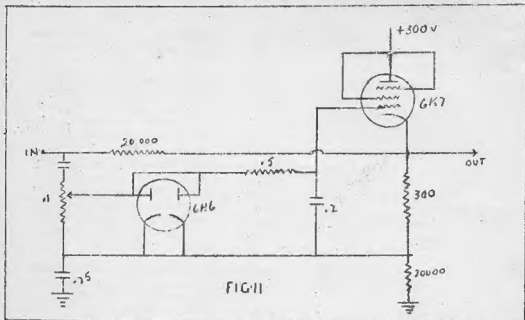
The most convenient means of obtaining volume expansion is undoubtedly a variable gain amplifier controlled by a voltage derived from the signal, but for low distortion most variable gain amplifiers must deal with only low signal levels. A separate amplifier must therefore be provided to obtain a suitably large voltage which is then rectified and fed to the controlled stage through a filter network, by means of which the time delay is introduced.

Fig. 9 shows the circuit of an expansion unit which is designed to embody the foregoing principles. The tube V4, the control amplifier, is a high slope output tetrode designed to develop a rectified





The output is thus inversely proportional to the slope of the valve. Using a variable mu pentode strapped as a triode, this can conveniently be varied by a DC bias on the control grid.



The complete circuit is shown in Fig 11. Using a 6K7 a change of only 10 volts in grid bias varies the slope from about 2 to 0.2 ma/volt. This is equal to a change of about 18 db.

Advantages claimed are that this circuit will handle voltages up to 20 without distortion, it does not require a separate amplifier before the rectifier and as the output impedance is low the output may be taken via a screened lead for some distance if required.

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#### RADIO POWER OPERATES LAMPS

The application of high frequency radio waves to lighting homes and public buildings was recently demonstrated. It was shown how brilliant vari-colored fluorescent tubes could be fully lighted without being connected to any electrical wiring. The generator used was a diathermy set.

Experimental lamps which consume less than an electric lamp and which may be left burning night and day for such jobs as lighting clock faces were demonstrated.

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READERS HAVE THEIR SAY.

Readers are invited to express their views on any subject relating to Amateur Radio. The views expressed are not necessarily those of the Management.

Editor,  
Amateur Radio"  
Sir,

Well, wouldn't it!! After reading Federal Headquarters' Notes of June 1944, I was so amazed at their proposed approach to the Radio Inspector's Department regarding FREE A.O.C.P. issues to ex-servicemen and women, that I just had to put pen to paper and voice my disapproval for the following reasons:-

1. A C.O. of a unit invariably has not knowledge of Wireless and therefore cannot judge a person's qualifications regarding same; he would have to rely on his junior officers for information. An instance of this is shown in Infantry and Artillery units who have signal personnel under their control. They are usually men who specialise in infantry and artillery alone and know nothing regarding wireless. The same applies even to a Signal unit. The C.O. may have come from any other section of Signals other than wireless.
2. There would be far too many abuses of the privilege for reasons above.
3. If a person has the knowledge required it would be no trouble for him or her to sit for an examination to obtain the licence.
4. A man may be a good technician, but may have little or any knowledge or practical experience of operating and vice versa.
5. It would definitely make all A.O.C.P.'s that have been issued become very cheap indeed.

I have spoken to a few Hams regarding these free issues and all seem to be of the same opinion as quoted above. What have other Hams to say on this matter, especially our brother services, the Navy and Air Force. Here's hoping the Department does not grant the privilege, thus nipping in the bud a little more "graft" that would arise in the services.

Yours faithfully,  
R. HIGGINBOTHAM .. VK3RN  
V255902

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SHORT WAVE BROADCASTING FROM ENGLAND.

Great strides have been made in short wave transmission in the past few years and with the increased number of transmitters the B.B.C. is literally "calling all nations" in forty-seven languages. Whilst for secrecy reasons it is not possible to say how many transmitters are at present in use, it is significant that fourteen short wave-lengths can now be employed simultaneously.

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THE GEORGE L. BERRYELECTROMECHANICAL TRANSDUCERS AND WAVE-FILTERS

Mason (New York--1942) .....335 pages .....42/6

This book covers the theory of various types of electro-mechanical filters, such as piezo crystals and magnetostrictive rods, and is quite definitely a specialist work.

The subject matter is covered under the following chapter headings:- Introduction, Electrical Network Theory, Application of network Theory to Lumped Mechanical Systems, Acoustic Equations and Networks. Vibration of Membranes and Plates. Electromechanical Converting Systems, Design of Electromechanical Systems, Application of Electromechanical Impedance Elements in Electrical Wave Filters.

Appendices deal with (A) Motion and Impedance of a Bar Vibrating in Flexure, Taking Account of Rotary Inertia. (B) General Wave Propagation Taking Account of Viscosity Effects. (C) Elastic and Piezoelectric Equations for Crystals.

Most of the above is treated in a solidly mathematical manner and for this reason and due to its specialised nature this book is recommended only to those who would delve deeply and often into this particular subject.

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ELECTRICAL FUNDAMENTALS OF COMMUNICATION

Albert (New York .... 1942) .....554 pages ..... 29/9.

For some reason for which I have never been able to fathom there have, in the past fifteen years been very few good books on straight out electrical fundamentals. I might even go so far as to say that they can be counted on the thumbs of one hand. Here, however, is a book which, while not exactly in the straight out electrical class, being written from the communication angle, nevertheless calls for another finger being brought into use.

Commencing with Fundamentals of Electronics (a wise beginning) Mr. Albert labels his second Chapter D.C and follows up with a discussion of Conductors, Insulators and Resistors. The DC section of the book ends with a chapter on DC Power and energy. The next six chapters deal with Alternating Currents as follows:- Inductance, Electric Fields and Capacitance, Electric Measuring Instruments, AC Circuits and Algebraic Representation of AC Quantities.

The remainder of the book presents a smooth transition from the above purely electrical topics into their application to communication engineering, under the headings of Electrical Networks, Bridge Circuits, the Transmission of Electromagnetic Waves. Fundamental Principles of Vacuum Tubes, Vacuum Tubes as Circuit Elements and Electroacoustics.

Appended is a set of tables of Natural Trigonometrical Functions. The whole book is easy reading and well set out with plenty of diagrams and altogether very useful....Alec. H. Clyde....Review Ed. Both copies by Courtesy McGills News Agency Melbourne.

SLOUCH HATS and FORAGE CAPS.

June...half another year gone, with the Hams still scattered everywhere, the old rig still collecting yet more cobswebs, and the FMG still holding all that Transmitting Apparatus...and much more important we still get just enough notes to fill these pages, the Magazine still goes on and a core of keen men in most states still keep the Divisions functioning under very great difficulties for all you chaps away.

They tell me that Morrie Meyers 2VN had a pretty good time up at Aitaape...of course I mean Mr. Squadron Leader Meyers...he being now an Officer and a Gentleman, like Jonas 3RJ, reckons he is. Hi! My Intelligence didn't have any further information so it is up to Morrie to let us know what happened. I also heard he spent eighteen hours at sea in one of those US.MT.Bs on a nice choppy sea, but he did not mention how much of his breakfast he lost on the journey, Hi! Anyway, Morrie those 127s were worth a story???

Having turned Fl/Lt R.E. Jones, one 3RJ into quite a good New South Welshman...fact he now has a little Miss NSW come to live with them for good. Well, his education being finished he is now about to depart for a station somewhere north. Naturally, another Ham 3RX is taking his place, of course. Clever work Ray to go away and leave all the night walking to Mrs. J., not that a VK2 baby would do such things.

Bill Sievers announces himself back again in VK3 after the Course at Bradfield...ok, Bill, Ray and I were only wondering while at supper the other night, just where you had gone to, Hi!

Last month I had a paragraph too many Fred (VK4RF) in your notes and it had to be deleted. As it mentioned that you had NOT put any address at the top of your notes I think I had better put it in here. Not that you hope for a reply. I know, Hi!

Eggar Foreman VK4GF entertains 4RF on his leave periods and Ham Radio is discussed to the full. A visitor to Townsville recently was KAIES, while 4EL has returned to Brisbane after spending 12 months at 4QN. What do you know of KAIES, Fred?

VK3EJ Pilot Officer Don Gilder writes from London via Airgraph. Don was another of the boys to obtain his call just prior to the war and hopes to catch up operating hours when the great day comes and the dust is dusted from the rigs again. Don has met a number of G's and also contacted quite a bunch of W's in the states last year, so he has many friendships to renew via 14mc.

Sgt. Harold Ackling VK2PX was down in Sydney for a spot of leave and was looking forward to a WIA meeting only to find it had changed quarters for just that night! Hard luck Harold on. we would all be glad to have seen you...but what was wrong with the telephone...it's not 7mc, I know, but it serves. Hi!

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P/o Sid Clark says that he met VK2EO, one ensign Cartor of the USN who enquires for VK2UT, VK2LP and anyone else who may have worked pre-war. Address is Ensign Cartor R.J. 1001 11th Ave. W. 3rd also mentions VK2G another Clark, initials R.G. 1001 11th Ave. W. 3rd. VK2AR radio is also represented up there by VK2AR and one B. Arnold who assisted the old VK2LZ in his early excursions on 200 and under.

We regret to learn that Jack McCandlish VK3MH of Sea Lake has been posted missing since June 1914 from a Commando unit. A letter from his Mother expresses complete confidence that he will eventually be reported safe.

VK3XP Rog Sankey is at present located at 33TT, RAAF Ultimo...and that is no great distance from VK2G's or 201's OH.

VK3UO F/Lt. C. G. Harvey is another of the old timers who has been located in the RAAF and is at present stationed at Parafield, whilst VK3AG Flying Officer George Glover may be located at Group 788 Darwin.

VK2DS Lt Geo. Peace of the 11th Aust Heavy W/T Sec AIF writes that he has met lots of Hams, but he forgets to say who they were. Perhaps, the arrival of one junior Op named David has made him a bit forgetful. Congrats George, and may the days of his brasspounding be long, and under better conditions.

Notes from Captain D. B. Knock one VK2NO are quite easy...I simply quote"....

So many Hams gather at a table occasionally in the Mess at Vic Barracks Melbourne, that certain Wing Commanders (not Hams, of course) sheer off in alarm and sit at other tables where they may at least understand the conversation. His other non-ham officers seem to be intrigued and likely to be bitten by a well-known "bug" after the War. VK2NO reckons its a pity that Hams don't wear their call signs in some way for identification among the fraternity. But alas, such is tabu on uniforms. Wouldn't be a bad idea for service Hams to wear "special" colour patches bearing call-signs. His old many fellows who are old friends over the air have passed each other by in this war will never be known. VK2NO & VK2AN met after a few years, dined and took in a Movie show in Melbourne. They had much to discuss and 4UW made 2N0s mouth water with tales of Jap gear in the Islands. VK3 Div had better be prepared because a large number of Hams of all Services are threatening to descend upon a Monthly Meeting...the main trouble is to co-ordinate such a gathering, so many are on duty when the others aren't.

VK2X4 is away from VK3 on a VERY important mission. It won't be "hash-hush" (or will it??)...he has to introduce himself as proud "Pop" to a recent arrival on his domestic hearth." Thanks Don, om., it was very handy (2YC)

And so ends the notes for June.... and we once more start watching the mails till there seems to be enough notes for July. So get a move on all you adventurers....QRA, 78 Maloney St., East-lakes Mascot.....or better still Phone, MU1092.

## DIVISIONAL NOTES

### THE EXHIBITION

The Exhibition that was to have been held at V.M.C.A. Buildings in place of the June General Meeting has been postponed to a date to be fixed.

It is anticipated that at the July General Meeting to be held at V.M.C.A. Buildings on Thursday 20th July, quite a deal of information will be to hand with reference to the Bush Fires Net.

WANTED - Articles for "Amateur Radio" by VK2 members. Some considerable time has elapsed since this Division forwarded articles to the magazine committee. Articles dealing with any scientific topic related to radio would be welcomed.

....oOo....

### EMERGENCY COMMUNICATION NETWORK

It has been decided to commence the Competition for the E.C.N. Cup on Tuesday 20th June and by this time the first round will be nearing completion. In the past it was the practice to commence each round on the first Friday of the month and end on the last Friday. This procedure has been slightly altered. In future each round will commence on either the Monday or Tuesday night, depending upon which night the exercise falls, following the Monthly General Meeting of the Division and will conclude on either the Monday or Tuesday night preceding the next General Meeting.

This change will mean very little to the actual competition, but will help the magazine Committee considerably. As you are aware it is necessary for "A.R." to go to print on a certain date and as all the work is done on a voluntary basis by members of the VK2 Division they have to have certain definite times for cutting stencils, printing and posting. By concluding each round of the competition on a day before the General Meeting will mean that these Notes can be despatched earlier.

The Radio Room at Central has now been completed and it is something that the Amateur movement may be well proud of. Most operators are conversant with the location of this room and know that it is a long but fairly area but when they visited it last, very little Radio equipment had been installed. In an endeavor to describe Central, I will assume the role of a visitor to VL2JB on any practice night.

Arriving at the door of the Control I see on my left two desks at which three operators are working. On the desks are a telephone,

Message Files, Receiver, Microphone, Speech Amplifier and Remote Control Apparatus for both Receiver and transmitter. Immediately in front of me is the main transmitter, VL2JB. This is of rack and panel design and in pre-war days was quite well-known on all amateur bands. This transmitter uses a pair of type 808 valves in push-pull and these are modulated by a pair of 809's. The R.F. driver section consists of 6V6 crystal oscillator, two 6L6 doublers and an 809 buffer. Over on the Control desk is a map of the metropolitan area showing the location of the various D.A.C.'s.

To the right of the transmitter are two other desks on which are two receivers. This section of the installation monitors signals both to and from the Sydney Harbor Patrols, M.S.B. Shore Station and the Police. The first Receiver is a medium frequency unit and covers Police transmissions and Shore-Ship messages. The second Receiver is a crystal-locked unit and is tuned to Ship-shore transmissions on a frequency of?? Over these desks is a map of the Harbor showing the various areas in which the boats are operating. As each transmission is made the operator logs it on a pad provided for this purpose.

The time is now getting on towards 8 o'clock. A series of telephone calls show that the Network Stations are signing on. As each station rings through, the call is noted and correct time given and the Deputy Controller or his assistant informed. It is now 8 p.m. and VL2JB goes on the air and each Network station is called up and signal reports are exchanged. When the last station has been checked in a few brief announcements dealing with W.I.A. or N.E.S. matters are made and then operators settled down to the business of the evening.

At 8.15 p.m. a general air of expectancy is noted and a few minutes later the first message comes through. It was mentioned earlier that at the two desks at the left of the transmitter three operators were seated. It may be as well to state their duties. Operator No.1 is at the Receiver and when the messages are coming through, they are taken down in duplicate on the requisite form by him. When checked back to the originating station they are handed on to Operator No.2 whose duty it is to log all transmissions and when logged, initial each message form and pass it on to Operator No. 3 who detaches the carbon copy, files it, and hands the original to a messenger who delivers it to the Officer in Charge of the Ambulance Control. In the meantime internal messages are being handed to the Deputy Controller and from these he is making up the Wireless Report that is transmitted each quarter hour. This Report, although considered a mass of figures at first really gives each outlying station some idea of what is happening in the other Groups.

Time is marching on, it is now 8.45 p.m. and messages are starting to pour in and all stations have quite a deal of traffic to handle and the band is reminiscent of 19200 kcs around about the beginning or middle of March in any pre-war year. Eventually stations are sorted out and although QRM is rather solid at times, very few repeats have

to be asked for.

It is now 9.15 p.m. and as each station "clears the hook" it is given the ok to close down. Every endeavour is made to see that stations take it in turn each to be first to clear traffic. As each station closes down, any errors made with procedure etc., during the course of the exercise are pointed out to the offenders in no uncertain manner.

9.30 p.m. All stations have signed off and VL2JB stands by for any calls, then closes down. A resume is then made of the number of messages handled both inwards and outwards and a Report made at the S.O.C.

Ed's Network activities have been confined to Metropolitan Members whilst Country Members have, of a necessity, had to more or less, take a back seat, but without wishing to raise anyone's hopes too high. It is anticipated that in the very near future they will be given a very important job to do.

In the past it has been stressed time and time again that the E.C.N has been a wonderful avenue in which to bring under the notice of Governmental bodies the value of the Australian Amateur. At present the Bush Fires Advisory Committee are considering the possibility of using Experimental equipment in order to combat this summertime menace to Australian lives and property. It is anticipated that in the very near future Country Experimenters will receive a circular setting out details of the proposed scheme and asking co-operation.

A few personal para:-

- VL2JC. Still going great guns. Just about the most enthusiastic station on the air. Handles more traffic than any other station, supports all Institute activities 100% including the Essay Competition and Exhibition. All four operators, Gordon Cole VK2DI, Eric Rugh 2ADK, Bill Lukes 2WD and Phil Cox VK2IE all reckon they're going to pull off the Cup again.
- VL2JE - Still fighting with VL2JL to see who puts in the strongest signal at Central. George Wilson VK2AG0 seems to be putting in a lot of time at the station. Now that the V.D.C. is on the Reserve we might hear "Foggo" Road 2DR sometime. By the way Jack, the genny still only gives 250 volts (sometimes).
- VL2JK - Still doing a good job under difficulties. Ken and Charlie gave me quite a shock one night when they described how they tuned the aerial! Ern Hodgkins still keeps their feet on the straight and narrow. Say, Ern do you ever Physco-analyse those lads. Member when you did it to me?
- VL2JL. "The Noise of the Network". R9 plus and then some. Network personnel will regret to learn that George Littlefair has had to resign from the position of Section Leader due to illness in the family and all Members will wish his wife a speedy recovery. George Patterson 2AH3 is the new S.L. and with STN Don Dunstan and Len Darton and JHF sometimes - why not always on - reckon they'll be there when the whips are cracking.

VL2JP. Ah! The DX of the Network, Bob Fussell 2SS, Eric Dickson 2AFM, Ron Richardson and "Flying Officer" Higgins 2LO are still having "Copper QRM" What will you do if they bring in some of the inmates (?) of the Industrial School boys? All young married men too. Higgs is a great guy, but forgets to bring the Minute Book sometimes. What are you going to do with that key you exhibited (?)

VL2JJ Want to know when in the ??? they are going to get some A.C. Network personnel will join with all Institute Members in expressing sympathy to George Shelley VK2QF who recently lost both father and mother in the course of a few months.

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- VICTORIAN DIVISION -

The Annual General Meeting of the Victorian Division will be held on Tuesday, August 1st, at the rooms 6th floor, Law Court Chambers, 191 Queen Street, Melbourne. The business of the meeting will be:-

- To receive and adopt the minutes of the last Annual General Meeting.
- To receive and adopt the President's Report.
- To receive and adopt the Balance Sheet for the year ending 30th June, 1944.
- To elect a President.
- To appoint an Auditor
- General Business.

Nominations for Council, which have been posted must be in the hands of the Secretary not later than Friday July 14th. Candidates must be full members and must be nominated and seconded by full members all of whom must be financial at 30th June, 1944.

Members subscriptions are now due, accounts have already been posted, and members are requested to complete the form at the bottom of the account forms and return to the Secretary.

For the benefit of members who are unable to attend the Annual General Meeting, the President's Address will be published in the August issue of the Magazine.

Congratulations to Ivor Morgan 3DH, and his wife on the recent arrival of a Junior Op....We haven't seen Ivor for some time???

.....oOo.....

# THE WIRELESS INSTITUTE OF AUSTRALIA



Divisions of the Wireless Institute of Australia exist in every State of the Commonwealth. The activities of these Divisions are co-ordinated by Federal Headquarters Division, the location of which is determined from time to time by ballot.

## Present location of F.H.Q. :— New South Wales

**Federal President :** F. P. DICKSON, VK2AFB.

**Vice-President :** H. F. PETERSON, VK2HP. **Federal Secretary :** W. G. RYAN, VK2TI.

**Councillors :** C. FRYAR, VK2NP ; W. J. McELREA, VK2UV

**Official Organ :** "AMATEUR RADIO"—Published by the Victorian Division.

## VICTORIAN DIVISION

**191 QUEEN ST., MELBOURNE**

**Postal Address :** Box 2611W, G.P.O.

**President :** H. N. STEVENS, VK3JO

**Secretary :** R. A. C. ANDERSON, VK3WY

**Treasurer :** J. G. MARSLAND, VK3NY

**Councillors :** I. MORGAN, VK3DH; T. D. HOGAN, VK3HX; R. J. MARRIOTT, VK3SI; C. QUIN, VK3WQ; A. H. CLYNE, VK3VX; H. BURDEKIN; K. RIDGWAY.

### Subscription Rates

Metropolitan .. . . .	£1 per annum
Country .. . . .	14/6 per annum
Defence Forces .. . . .	7/6 per annum

Subscription includes "AMATEUR RADIO"

### Meeting Night

**First Tuesday in each month at W.I.A. Rooms,  
191 Queen Street.**

Visiting Overseas and Interstate Amateurs are welcome at meetings and they are invited to communicate with the Membership Secretaries :

T. D. HOGAN .. VK3HX .. UM1732

J. G. MARSLAND VK3NY .. WF3958

## NEW SOUTH WALES DIVISION

**Registered Office :**

**21 TUNSTALL AV., KINGSFORD**

**Telephone :** FX3305

**Postal Address :** Box 1734JJ, G.P.O., Sydney

### Meeting Place

**Y.M.C.A. BUILDINGS, PITT ST., SYDNEY**

**President :** R. A. PRIDDLE, VK2RA

**Vice-Presidents :** H. F. PETERSON, VK2HP;  
E. HODGKINS, VK2EH.

**Secretary :** W. G. RYAN, VK2TI

**Treasurer :** W. J. McELREA, VK2UV.

**Councillors :** N. GOUGH, VK2NG; E. TREHARNE,  
VK2AFQ; P. DICKSON, VK2AFB; C. FRYAR, VK2NP;  
R. MILLER

### Subscription Rates

Full Members .. . . .	10/6 per annum
Service Members .. . . .	7/6 per annum

The N.S.W. Division meets on the third Thursday of each month at Y.M.C.A. Buildings, Pitt St., Sydney and an invitation is accorded to all Amateurs to attend. Overseas and Interstate Amateurs who are unable to attend are asked to phone the Secretary at FX3305.

## WESTERN AUST. DIVISION

**C.M.L. Buildings,**

**ST. GEORGE'S TERRACE, PERTH**

**Postal Address :** BOX N1002, G.P.O. PERTH.

**Secretary :** C. QUIN, VK6CX.

## QUEENSLAND DIVISION

**Box 1524V, BRISBANE**

## SOUTH AUSTRALIAN DIVISION

**Box 284D, ADELAIDE**

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**BOX 547E, HOBART**